

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application:

Claims 1 - 6 (canceled)

Claim 7 (currently amended): An amorphous carbon film, comprising:

an amorphous carbon layer; and

an interlayer disposed between a base material and the amorphous carbon layer, said interlayer containing at least one substance selected from the group consisting of B, Al, Ti, V, Cr, Zr, Nb, Mo, Hf, Ta, and W, and said interlayer having a thickness of 0.5 nm or greater 10 nm or less;

wherein on a base material side of said interlayer, there is a mixed layer which contains portions of the base material and the interlayer material and which has a thickness of 0.5 nm or greater and 10 nm or less,

wherein an average oxygen concentration contained in said mixed layer or in said mixed layer and interlayer is 1 at % or less,

wherein a concentration of carbon in the amorphous carbon layer is 99.5 at % or greater, a concentration of hydrogen in the amorphous carbon layer is 0.5 at % or less, a concentration of a rare gas element in the amorphous carbon layer is 0.5 at % or less, and

wherein the amorphous carbon film is formed by:

executing a cathode arc ion plating method, with solid carbon as raw material and under an atmosphere with a degree of vacuum of 0.05 Pa or lower.

Claim 8 (original): An amorphous carbon film as described in claim 7, wherein: said mixed layer and said interlayer have a combined thickness of 10 nm or less.

Claim 9 (previously presented): An amorphous carbon film according to any one of claims 7 and 8, wherein a thickness of said mixed layer is 0.5 nm or greater 5 nm or less.

Claims 10 - 17 (canceled)

Claim 18 (previously presented): An amorphous carbon film according to any one of claims 7 and 8, wherein said amorphous carbon layer has a density of 2.8 g/cm^3 or greater and 3.3 g/cm^3 or less.

Claim 19 (previously presented): An amorphous carbon film according to any one of claims 7 and 8, said amorphous carbon layer has a spin density of $1 \times 10^{18} \text{ spins/cm}^3$ or greater and $1 \times 10^{21} \text{ spins/cm}^3$ or less.

Claim 20 (canceled).

Claim 21 (previously presented): An amorphous carbon film according to any one of claims 7 and 8, wherein said amorphous carbon layer is essentially formed from carbon.

Claim 22 (previously presented): An amorphous carbon film according to any one of claims 7 and 8, wherein Knoop hardness is 3000 or greater 7000 or less.

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Claims 23 (canceled).

Claim 24 (currently amended): A method for manufacturing an amorphous carbon film according to any one of claims 7 and 8, wherein said executing step further includes the step of further comprising:

~~executing a cathode arc ion plating method or laser ablation method, with solid carbon as raw material and under an atmosphere with a degree of vacuum of 0.05 Pa or lower; and~~

forming an amorphous carbon layer without introducing gas which contains hydrogen or rare gas

Claim 25 (currently amended): An amorphous carbon film according to any one of claims 7 and 8, A method for manufacturing an amorphous carbon film according to claim 23, wherein the amorphous carbon film is further formed by [[comprising]]:

synthesizing said mixed layer by applying a negative bias voltage on said base material and using an ion injection method, plasma CVD method, sputter method, ~~cathode arc ion plating method, or laser ablation method.~~

Claim 26 (currently amended): An amorphous carbon film according to any one of claims 7 and 8, A method for manufacturing an amorphous carbon film according to claim 23, wherein the amorphous carbon film is further formed by [[comprising]]:

synthesizing said mixed layer by applying a negative bias voltage on said base material and using said an ion injection method, plasma CVD method, sputter method, cathode arc ion (W:\20239\0201924-us0101407503.DOC 20080219 14:07:53)

plating method[[,]] or ~~laser ablation method~~ under an atmosphere which contains rare gas.

Claim 27 (previously presented): An amorphous carbon film coated material,
comprising:
a material being coated with an amorphous carbon film according to any one of claims 7
and 8.

Claim 28 - 31 (canceled).

Claim 32 (previously presented): An amorphous carbon film coated material,
comprising: a material being coated with an amorphous carbon film manufactured by a method
according to claim 25.

Claim 33 (previously presented): An amorphous carbon film coated material,
comprising:
a material being coated with an amorphous carbon film manufactured by a method
according to claim 26.

Claim 34, 35 (canceled).